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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/516,602

07/05/2005

Hong-Sick Park

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7109

7590 01/04/2008
F. Chau & Associates, LLC
130 Woodbury Road
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EXAMINER

MULPURI, SAVITRI

ART UNIT

PAPER NUMBER

2812

MAIL DATE

DELIVERY MODE

01/04/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/516,602	Applicant(s) PARK ET AL.	
	Examiner Savitri Mulpuri	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/17/07;9/24/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to the applicant's response filed on 10/29/2007

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chae (US 6,919,931) in combination with Kelly et al (US 6,524,663) and Kudas et al (US 2003/0124259A) and Qian(US 6,365,968).

Chae teaches a method of manufacturing and a thin film transistor device for array panel, the method comprising:

Forming a gate wire on an insulating substrate "22", the gate wire including a gate line "13", a gate electrode "26", and a gate pad "41";

With respect to claims 4-9, sequentially depositing a gate insulating layer "51", amorphous silicon layer "53", and ohmic contact layer "55" on the gate wire;

Patterning the ohmic contact layer and the amorphous layer by photolithography;

Forming a data wire on the ohmic contact layer, and the data wire including source and drain electrodes "28, 30", a data line "15", data pad (not shown);

forming a protective layer "57" on the data wire, the protective layer having a first contact hole "59" exposing the drain electrode, a second contact hole exposing the gate pad "61" and a third contact hole exposing the data pad (not shown) and;

forming pixel electrode "17", a subsidiary gate pad or transparent pad electrode "43" on gate pad "41", add subsidiary data pad or transparent pad electrode (not shown) on data pad on the protective layer, the pixel electrode being connected to the drain electrode through first contact hole, the subsidiary gate pad being connected to the gate pad through the second contact hole, the subsidiary data pad being connected to the data pad through the third contact hole (see fig 22, 3 4A-5 and related description).

With respect to claim 9 Chae also teaches forming protective layer with prominent and depressed portions

Chae does not teach forming an organometallic layer by coating a photosensitive organometallic complex; placing a photomask over the organometallic layer such that a predetermined region of the organometallic is exposed; exposing the organometallic layer to the light through a photomask; and developing the organometallic layer.

Kelly et al teaches a method of forming a metal pattern for integrated circuits comprising: forming an organometallic layer by coating a photosensitive organometallic complex; exposing the organometallic layer to light through a photomask; and forming a metal pattern by developing the organometallic layer (see abstract and col 1, lines 46-54). Kelly further teaches making integrated circuits by forming metallization by using organic metal compounds, wherein metals includes Cu Ni, gold, or any other suitable metals (see col. 8, lines 47-50; col. 9, lines 46-49). It would have been obvious

to one of ordinary skill in the art to form metal pattern in the invention of Chae by forming organometallic layer by coating a photosensitive organometallic complex and exposing the organometallic layer to light through photomask and developing and forming a metal pattern by developing the organometallic layer because such process is electroless plating and gives good quality result and metal pattern can be formed on the insulator or on the semiconductor or on the conductors(see col. 1, lines 35-45). Chae in view of Kelly would result the same structure as the structure recited in claims 10-13 (see fig. 2, -4 and related description).

With respect to claims 1, 2-22 neither Chae nor Kelly teaches organic material containing silver or aluminum.

Kodas et al (US 2003/0124259A). teaches metal organic precursor composition containing UV sensitive organic ligand by using organic metallic complex containing silver or aluminum to form metal as a contact on semiconductor materials(see para 0023,para 0049,para0058). Kodas et al also discloses ultraviolet irradiation by using photo mask to form metal pattern (para 0168). It would have been obvious to one of ordinary skill in the art to form silver or Al metal pattern in the invention of modified invention Chae because Kelly gives a choice of using any other suitable metals alternative disclosed materials such Pd, Pt Ag.

Clearly both Kelly and Kodas (para0168) teach, "The development of organometallic layer is made by way of organic solvent".

Kelly teaches organometallic compound is either in liquid state or solid state to form metal pattern for integrated circuits by coating a photosensitive organometallic

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complex; exposing the organometallic layer to light through a photomask; and forming a metal a pattern by developing the organometallic layer(see abstract and col1, lines 46-54). Kelly further teaches making integrated circuits by forming metallization by using organic metal compounds, wherein metals includes Cu Ni, gold , or any other suitable metals (see col. 8, lines 47-50; col. 9, lines 46-49 . Kodas teaches organometallic compound is as organic solvent. It would have been obvious to one of ordinary skill in the art to use organic metallic compound as a liquid or solid state because both forms are suitable to form metal pattern for integrated circuits as taught by Kelly et al or Kodas.

None of the above references teach embossing surface. Qian teaches forming embossing surface on the protection layer "118" by using a photoresist with variable thickness and then followed by oxide metal layer (abstract and col.2, lines 34-47). It would have been obvious to one of ordinary skill the art to form embossing surface in the modified invention invention of Chae because embossing the surface by suing photoresist with variable thickness would give good adhesion between embossed layer and the subsequently deposited layer.

Applicant's arguments with respect to claims 4-26 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Savitri Mulpuri whose telephone number is 571-272-1677. The examiner can normally be reached on Mon-Fri from 8 a.m. to 4.30 p.m...

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt, can be reached on 571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'S. Mulpuri', is positioned to the right of the text block.

Savitri Mulpuri
Primary Examiner
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